WHAT IS CLAIMED IS:

1. A multi-mode scheduler including a N×kM scheduler for adjusting data transmission between N-pieces of input interface sections, where said N is a positive integer, and said kM-pieces of output interface sections, where said M is a positive integer and said k is an integer not less than two, said multi-mode scheduler comprising:

k-pieces of N×M schedulers to be said N×kM scheduler; and

(k-1)-pieces of selection circuits for switching allocated output port information input from an outside of said N×kM scheduler and information from said N×M scheduler at a front step so as to be input to said N×M scheduler as allocated output port information:

wherein an operation of said N×kM scheduler or an operation of said N×M scheduler having k-pieces of priority classes is set freely with switching operation of said (k-1)-pieces of selection circuits.

2. The multi-mode scheduler according to Claim 1, wherein j-pieces of said N×kM scheduler (where j is an integer not less than two) are connected so as to make up said jN×kM scheduler when said allocated output port information input from said outside is used.

3. The multi-mode scheduler according to Claim 2, wherein each of said (k-1)-pieces of selection circuits selects said allocated output port information input from said outside when said allocated output port information input from said outside is used.

1   4.   The multi-mode scheduler according to Claim 2, wherein

2 j-pieces of said N×kM scheduler are pipeline-connected so as to

3 make up said jN×kM scheduler (where j is an integer not less than

4 two).

1   5.   The multi-mode scheduler according to Claim 1, wherein

2 said N×kM scheduler is used alone so as to make up said N×M

3 scheduler having k-pieces of priority classes when information

4 from said N×M scheduler at said front step is used.

1   6.   The multi-mode scheduler according to Claim 5, wherein

2 each of said (k-1)-pieces of selection circuits selects

3 information from said N×M scheduler at said front step when said

4 N×kM scheduler is used alone.

1   7.   The multi-mode scheduler according to Claim 1, wherein

2 each of said N-pieces of input interface sections includes a

3 virtual output queue) buffer for storing reception data for each

4 output interface section to be a destination.

1   8.   A multi-mode scheduler including a N×kM scheduler for

2 adjusting data transmission between N-pieces of input interface

3 means, where said N is a positive integer, and said kM-pieces of

4 output interface means, where said M is a positive integer and

5 said k is an integer not less than two, said multi-mode scheduler

6 comprising:

7   k-pieces of N×M schedulers to be said N×kM scheduler; and

8   (k-1)-pieces of selection means for switching allocated

9 output port information input from an outside of said N×kM

10 scheduler and information from said N×M scheduler at a front step

11   so as to be input to said N×M scheduler as allocated output port

12   information:

13   wherein an operation of said N×kM scheduler or an operation

14   of said N×M scheduler having k-pieces of priority classes is set

15   freely with switching operation of said (k-1)-pieces of selection

16   means.

1   9.   The multi-mode scheduler according to Claim 8, wherein

2   j-pieces of said N×kM scheduler (where j is an integer not less

3   than two) are connected so as to make up said jN×kM scheduler when

4   said allocated output port information input from said outside

5   is used.

1   10.   The multi-mode scheduler according to Claim 9, wherein

2   each of said (k-1)-pieces of selection means selects said

3   allocated output port information input from said outside when

4   said allocated output port information input from said outside

5   is used.

1   11.   The multi-mode scheduler according to Claim 9,

2   wherein j-pieces of said N×kM scheduler are pipeline-connected

3   so as to make up said jN×kM scheduler (where j is an integer not

4   less than two).

1   12.   The multi-mode scheduler according to Claim 8, wherein

2   said N×kM scheduler is used alone so as to make up said N×M

3   scheduler having k-pieces of priority classes when information

4   from said N×M scheduler at said front step is used.

1   13.   The multi-mode scheduler according to Claim 12,

2   wherein each of said (k-1)-pieces of selection means selects

3   information from said N×M scheduler at said front step when said

4   N×kM scheduler is used alone.

1   14.   The multi-mode scheduler according to Claim 8, wherein

2   each of said N-pieces of input interface means includes a virtual

3   output queue) buffer for storing reception data for each output

4   interface means to be a destination.

1   15.   An apparatus including a multi-mode scheduler

2   including a N×kM scheduler for adjusting data transmission

3   between N-pieces of input interface sections, where N is a

4   positive integer, and kM-pieces of output interface sections,

5   where M is a positive integer and k is an integer not less than

6   two, said multi-mode scheduler comprising:

7   k-pieces of N×M schedulers to be said N×kM scheduler; and

8   (k-1)-pieces of selection circuits for switching allocated

9   output port information input from an outside of said N×kM

10 scheduler and information from said N×M scheduler at a front step

11 so as to be input to said N×M scheduler as allocated output port

12 information:

13   wherein an operation of said N×kM scheduler or an operation

14 of said N×M scheduler having k-pieces of priority classes is set

15 freely with switching operation of said (k-1)-pieces of selection

16 circuits.

1   16.   An apparatus including a multi-mode scheduler

2   including a N×kM scheduler for adjusting data transmission

3   between N-pieces of input interface means, where N is a positive

4   integer, and kM-pieces of output interface means, where M is a

5   positive integer and k is an integer not less than two, said

6   multi-mode scheduler comprising:

7   k-pieces of N×M schedulers to be said N×kM scheduler; and

8   (k-1)-pieces of selection means for switching allocated

9   output port information input from an outside of said N×kM

10   scheduler and information from said N×M scheduler at a front step

11   so as to be input to said N×M scheduler as allocated output port

12   information:

13   wherein an operation of said N×kM scheduler or an operation

14   of said N×M scheduler having k-pieces of priority classes is set

15   freely with switching operation of said (k-1)-pieces of selection

16   means.

1   17. A multi-mode scheduling method used in a N×kM scheduler

2   for adjusting data transmission between N-pieces of input

3   interface means, where N is a positive integer, and kM-pieces of

4   output interface means, where M is a positive integer and k is

5   an integer not less than two, said multi-mode scheduler

6   comprising:

7   k-pieces of N×M schedulers to be said N×kM scheduler; and

8   (k-1)-pieces of selection circuits for switching allocated

9   output port information input from an outside of said N×kM

10   scheduler and information from said N×M scheduler at a front step

11   so as to be input to said N×M scheduler as allocated output port

12   information:

13   wherein an operation of said N×kM scheduler or an operation

14   of said N×M scheduler having k-pieces of priority classes is set

15   freely with switching operation of said (k-1)-pieces of selection

16   circuits.